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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/888,363	06/21/2001	Kong Lam Song	IDT-1661	8897

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EXAMINER	
KIM, CHONG R	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/888,363	SONG, KONG LAM	
	Examiner	Art Unit	
	Charles Kim	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment and Arguments

1. Applicant's amendment filed on September 13, 2004 has been entered and made of record.

2. In view of applicant's amendment, the 112 second paragraph rejections are withdrawn.

3. Applicant's arguments, see pages 5-8, filed September 13, 2004, with respect to the rejection(s)of claim(s) 5-7 under 35 U.S.C 102 as being anticipated by Nichani and the rejection(s) of claim(s) 1-4, 8 under 35 U.S.C. 103 as being unpatentable over Nichani have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Cipolla et al., U.S. Patent No. 5,052,606 ("Cipolla"), Neumann, U.S. Patent Application Publication No. 2003/0133604 ("Neumann"), and Farnworth et al., U.S. Patent No. 6,210,984 ("Farnworth"). The details of the rejections are provided below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Cipolla et al., U.S. Patent No. 5,052,606 ("Cipolla") and Neumann, U.S. Patent Application Publication No. 2003/0133604 ("Neumann").

Referring to claim 1, Cipolla discloses a die bonding apparatus for bonding an integrated circuit die onto a lead frame, the apparatus comprising:

a. a first camera (38) for capturing a lead frame image corresponding to the lead frame (col. 3, lines 44-53);

b. a second camera (36) for capturing a die image corresponding to the IC die (col. 3, lines 44-53);

c. an automatic image matching system for comparing the captured lead frame image with a stored lead frame image (col. 7, lines 9-21) and for generating an error signal if the captured lead frame image fails to match the stored lead frame image, wherein the error signal is generated before the IC is mounted onto the lead frame (col. 7, lines 9-67. Note that the control signal generated based on the differences between the captured lead frame image and the stored lead frame image is interpreted as the "error signal").

Cipolla does not explicitly disclose that the captured die image is compared with a stored die image. However, this feature was exceedingly well known in the art. For example, Neumann discloses an automatic image matching system for comparing a captured die image with a stored die image and generating an error signal if the captured die image fails to match the stored die image (pages 7-9, paragraphs 65-76).

Cipolla and Neumann are combinable because they are both concerned with semiconductor manufacture inspection systems. At the time of the invention, it would have been

obvious to a person of ordinary skill in the art to modify the imaging matching system of Cipolla so that it compares the captured die image to a stored die image, as taught by Neumann. The suggestion/motivation for doing so would have been to reduce costs related to the presence of wafer defects during mass production stages, thereby enhancing the manufacturing process (Neumann, page 1, paragraph 6). Therefore, it would have been obvious to combine Cipolla with Neumann to obtain the invention as specified in claim 1.

Referring to claim 2, Cipolla further discloses that the auto matching vision system comprises a vision board for digitizing images received from the first and second cameras (col. 7, lines 22-39).

Referring to claim 3, Cipolla further discloses a computer (figure 6).

Referring to claim 4, Cipolla further discloses that the auto matching vision system further comprises a signal controller for transmitting an error signal to the die bonding apparatus in response to a control signal generated by the computer when the captured lead frame image fails to match the stored lead frame image (col. 7, lines 9-67).

5. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Cipolla et al., U.S. Patent No. 5,052,606 ("Cipolla"), Neumann, U.S. Patent Application Publication No. 2003/0133604 ("Neumann"), and Farnworth et al., U.S. Patent No. 6,210,984 ("Farnworth").

Referring to claim 5, Cipolla discloses a method for operating a die bonding apparatus, the method comprising:

a. storing a first lead frame image [col. 7, lines 7-39];

b. capturing a second lead frame image and a die image corresponding to a lead frame and an IC die received by the die bonding apparatus [col. 3, lines 44-53 and col. 7, lines 7-39];

c. comparing the second lead frame image with the first lead frame image (col. 7, lines 7-39).

Cipolla does not explicitly disclose the step of storing a first die image and comparing the captured die image with the stored first die image. However, these features were exceedingly well known in the art. For example, Neumann discloses the steps of comparing a captured (second) die image with a stored (first) die image to determine if the die from the captured image is defective (pages 7-9, paragraphs 65-76).

Cipolla and Neumann are combinable because they are both concerned with semiconductor manufacture inspection systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the imaging matching system of Cipolla so that it compares the captured die image to a stored die image, as taught by Neumann. The suggestion/motivation for doing so would have been to reduce costs related to the presence of wafer defects during mass production stages, thereby enhancing the manufacturing process (Neumann, page 1, paragraph 6). Therefore, it would have been obvious to combine Cipolla with Neumann.

Cipolla and Neumann do not explicitly disclose that the operation of the die bonding apparatus is terminated before the IC die is mounted onto the lead frame if one of the second lead frame image and the second die image fails to match the first lead frame image and the first die image, respectively.

Farnworth explains that the step of determining a die to be defective after the IC die is mounted onto the lead frame is inefficient and costly (col. 1, lines 57-60). In other words, Farnworth suggests that if the die is determined to be defective, the operation of a die bonding apparatus should be terminated before the IC die is mounted. In this case, Neumann explains that the die is considered defective if the second die image fails to match the first die image (page 9, paragraphs 75-76). Accordingly, the combination of Cipolla, Neumann, and Farnworth disclose the step of terminating the operation of the die bonding apparatus before the IC die is mounted onto the lead frame if the second die image fails to match the first die image.

Cipolla, Neumann, and Farnworth are combinable because they are all concerned with semiconductor manufacture inspection systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the method of Cipolla and Neumann so that the operation of the bonding apparatus is terminated before the IC is mounted onto the lead frame, as taught by Farnworth. The suggestion/motivation for doing so would have been to increase the efficiency and reduce the costs of the manufacturing process. Therefore, it would have been obvious to combine Cipolla and Neumann with Farnworth to obtain the invention as specified in claim 5.

Referring to claim 6, Cipolla further discloses the step of detecting a lead frame received by the die bonding apparatus (col. 3, lines 44-53).

Referring to claim 7, Cipolla further discloses the step of detecting a die received by the die bonding apparatus (col. 3, lines 44-53).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Tezuka et al. U.S. Patent No. 4,851,902 discloses a semiconductor inspection system that removes a lead frame from the production line if it is determined to be defective.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Kim whose telephone number is 571-272-7421. The examiner can normally be reached on Mon thru Thurs 8:30am to 6pm and alternating Fri 9:30am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 571-272-7414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ck
May 13, 2005

Jon Chang
Primary Examiner